(No Model.) 2 Sheets—Sheet 1.

# W. E. ARNOLD.

## BOILER FOR COOKING GRAIN.

No. 264,215. Patented Sept. 12, 1882.

Fig. 1.

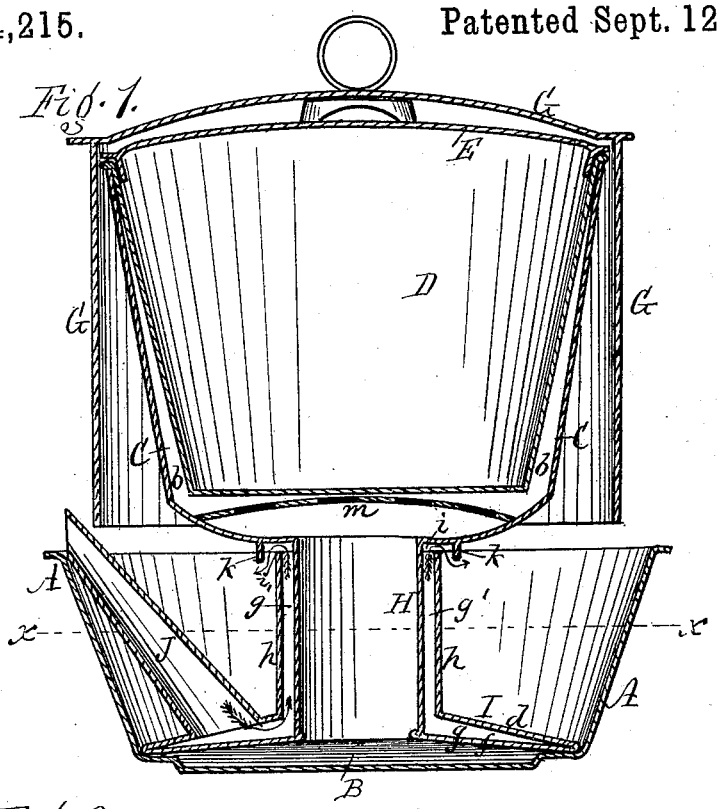



Fig. 2.

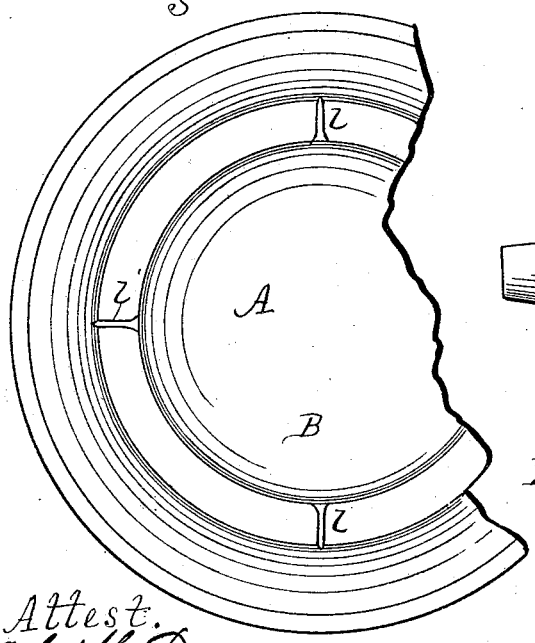



Fig. 3.

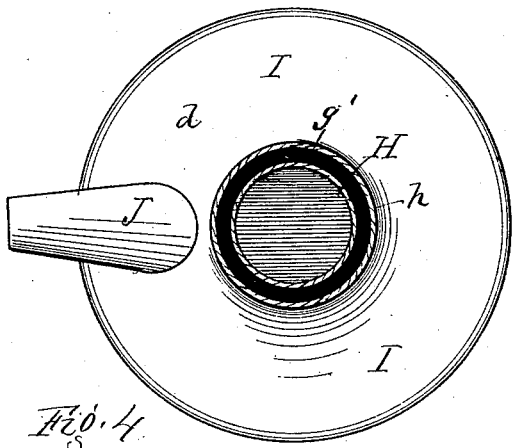
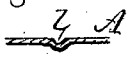



Fig. 4.

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(No Model.) 2 Sheets—Sheet 2.

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## BOILER FOR COOKING GRAIN.

No. 264,215. Patented Sept. 12, 1882.

Fig. 4

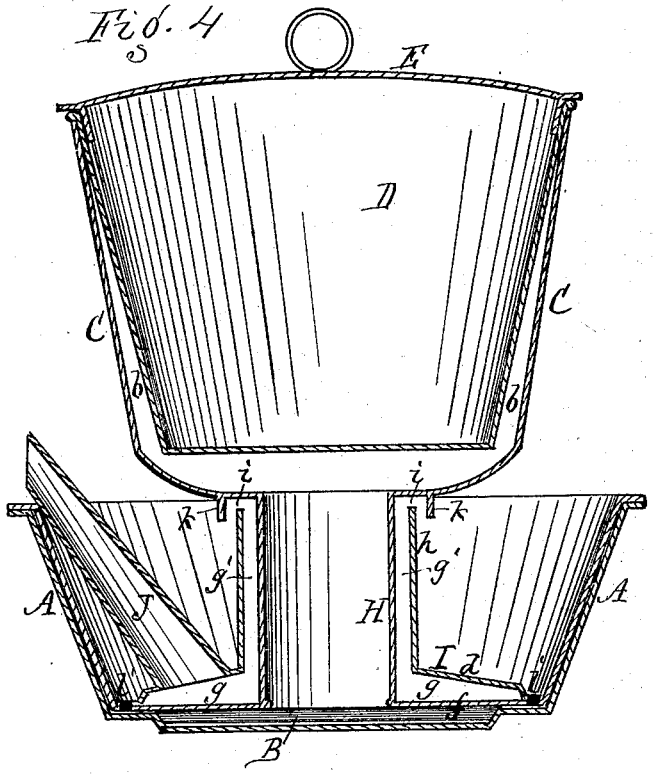
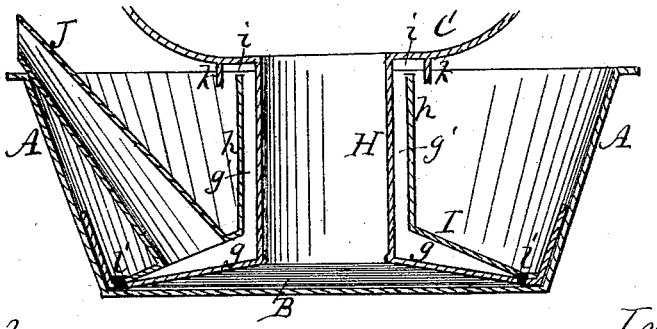



Fig. 5.

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# UNITED STATES PATENT OFFICE.

WILLIAM E. ARNOLD, OF ROCHESTER, NEW YORK.

## BOILER FOR COOKING GRAIN.

SPECIFICATION forming part of Letters Patent No. 264,215, dated September 12, 1882.

Application filed March 13, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM E. ARNOLD, of Rochester, Monroe county, New York, have invented a certain new and useful Improvement in Boilers for Cooking Grain and Farinaceous Food; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is central vertical section of the boiler. Fig. 2 is a plan of a portion of the supply-reservoir. Fig. 3 is a cross-section in line *x x*, looking downward, the supply-reservoir being removed from place. Figs. 4 and 5 are modifications of Fig. 1.

My invention relates to culinary boilers in which a supply-reservoir is used holding the main body of water, and a thin heating-chamber is employed which receives its water from the reservoir above by means of small passages leading from one to the other. The design is to simplify and cheapen the construction, and to facilitate washing and cleaning; and the invention consists in the construction and arrangement of the parts hereinafter specifically described and claimed.

In the drawings, A shows the supply-reservoir, which is simply an open-topped flaring basin or pan. In the bottom is struck down a shallow depression or cavity, B, which forms the hot-water generator.

C is the steam-chamber, consisting of an open-topped receptacle, in which is placed the kettle or cooking-vessel D, the latter covered by a cover, E, and the whole surmounted by a condenser, G, consisting of a cylindrical vessel inverted, the lower open end resting over and above the supply-reservoir A and discharging the waters of condensation therein. The condenser may or may not be used at pleasure. A jacket-space, *b*, is left between the boiler and kettle, allowing the steam to surround the latter, and this steam, escaping at the top, is condensed within the condenser and returned to the supply-reservoir.

My improvement is as follows:

H is a tube or small cylinder attached to the lower end of the boiler and really forming a part of it.

I is a circular hollow disk or chamber attached permanently to the lower end of the tube, and of such diameter as to sit loosely into the bottom of the supply-reservoir A and be seated firmly, as in Fig. 1. This chamber consists of two plates, *d f*, leaving an air-space, *g*, between, and from the upper plate rises an exterior tubular casing, *h*, leaving an air-flue, *g'*, which is a continuation of *g*. The casing *h* is shorter than tube H, leaving thereby a passage, *i*, at the top, which opens into the outer air. A circular flange, *k*, stands down from the bottom of the boiler outside of the casing, which causes the water which runs down outside the boiler to drip into the supply-reservoir without running into the flue *g'*.

J is a tube or spout attached on top of the air-chamber I, opening into it, said tube extending up as high as or higher than the top of the supply-reservoir, and its upper end being open to allow the entrance of air, which then flows down, filling the air-chamber, and rises through the flue *g'* and escapes at the top of the casing. If desired, two or more of the tubes J may be used; or a large tube or cylinder may be used, surrounding the casing *h* and leaving an annular space between itself and the casing, through which cold air may pass down into the air-chamber.

It will be seen that the tube or cylinder H, the casing *h*, the chamber I, and the air-tube J are permanent attachments of the steam-chamber C, and are separate and independent of the reservoir A, and can be placed into and taken out of the latter at pleasure, and when removed the reservoir is simply an ordinary basin or pan. In the bottom of the supply-reservoir are struck radial nicks or grooves *l l*, which rest below the chamber I when in place and form connections or passages between the reservoir and the heating-chamber B, so that the water can pass down and supply the chamber.

*m* is a grate or support used for steaming articles when the kettle is removed.

By the means above described a thin generating-chamber, B, is left below the main supply of water, in which water is rapidly heated. Heretofore, so far as I am aware, this chamber has been permanently attached below and to the supply-reservoir. The essential feature in my invention is the chamber I, attached to the boiler and simply sitting loosely in the outer reservoir, by which means the generator is formed beneath. The arrangement is much

simpler and cheaper, and the parts are much more easily washed and cleaned, as when the parts are detached the external basin is entirely free and open and the air-chamber presents only an external smooth surface.

Another advantage consists in making the chamber I hollow and forming an air passage and flue, so that the water in the external reservoir is prevented from overheating, and the hot water in the generator and water-passage is prevented from chilling.

Various modifications may be used with the same result. The condenser may be dispensed with. In Fig. 4 is shown one basin or pan fitting inside another, the inner one being attached to the tube H and removable with the boiler, it also holding the supply-water, the bottom pan forming the generator. A conical disk forming the air-chamber I is attached in the bottom of the inner pan, or, if desired, on the under side instead, and being provided with the same air-tube J and casing *h*. The depression B may be formed in the bottom of the outer pan, and the nicks *l l* be used, as before described; or the bottom of the outer pan may be made straight, as in Fig. 5, and the bottom of the air-chamber be made concave on the under side to form the generator, and holes or tubes *l' l'* may be formed at any desired point to allow the supply-water to pass downward. If desired, the inner basin or pan may be only part the height of the other, and not extend all the way up to the top.

Having thus described my invention, I claim—

1. In a cooking-boiler, the combination of the supply-reservoir, the steam-chamber, an air-chamber attached to the lower end of the steam-chamber, and sitting loosely into the reservoir, forming between itself and the bottom of the reservoir a hot-water generator, an air tube or tubes attached to the air-chamber, and extending to the top of the reservoir for admitting cold air, holes or passages for allowing the flow of water from the supply-reservoir to the hot-water generator, and a discharge-passage for the escape of heated air from the air-chamber, as set forth.

2. In a cooking-boiler, the combination, with the boiler C, of the tube or cylinder H, the air-chamber I, the casing *h*, and the air tube or tubes J, all forming a permanent attachment with the boiler, as herein shown and described.

3. The combination, with the tube or cylinder H, and the open-topped casing *h*, surrounding the same, of the flange *k*, attached to the bottom of the boiler outside the casing, as shown and described, and for the purpose specified.

4. The reservoir A, constructed with the depressed bottom B, and with nicks *l l* in the raised portion of the bottom, forming passages for water beneath the air-chamber when placed in the reservoir, as herein shown and described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

WILLIAM E. ARNOLD.

Witnesses:
R. F. OSGOOD,
JACOB SPAHN.